Trailer Vision™

User Manual

Model: Digi-Max

Digital Wireless Camera System

⚠ This is a driving aid, safe driving, good observation and use of the rear-view/wing mirror are still necessary.

PLEASE READ CAREFULLY AND SAVE

This manual contains important information about this product's operation. If you are installing this product for others, you must leave this manual, or a copy, with the end user.

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Product Specification

System Parts

(1) Digital Wireless IP65 Colour Camera
(2) 7" LCD Colour Monitor
(3) Antenna for the camera
(4) 5V Cigarette Power Adapter for the Monitor
(5) Screw/fixings bag
(6) Windscreen holder for the Monitor
(7) Dash-board mount for the Monitor
(8) IR Remote Control for the Monitor
(9) User Manual

Product Specification

	Camera	Monitor
Maximum Channels	1	4
Communication Range	200 metres in open space	
Resolution	640 × 480 (VGA)	
Operating Temperature	-10˚C + 50˚C	
Operating Voltage	DC 12V~24V	DC 5V
Current Consumption	160mA(max)	850mA(max)
Night View Range	3~5 M	
Dimension	95 × 92 × 80 mm	233 × 145 × 36 mm

WELCOME

Dear Customer,

Thank you for purchasing this unique product, which utilises the latest digital wireless technology ensuring **ZERO interference**. Please read the following information carefully before installing and using this product.

Important Safety Precautions

Damage caused by non-compliance with this operating manual will void the warranty! We will not assume any liability for damage to items or persons caused by improper handling or non-compliance with the safety notices! Any warranty claim will be null and void in such cases.

1. Do not drop, puncture or disassemble the camera or monitor; otherwise the warranty will be void.
2. Avoid all contact with water, and dry hands before using the monitor.
3. Never tug on the power cords.
4. Do not expose the monitor to high temperature, or leave it positioned in direct sunlight (e.g. permanently fixed to the windscreen). Doing so may cause damage, or temporary malfunction.
5. Use the devices with care; only gentle pressure is required to use the monitor buttons.
6. For your own safety, avoid using the camera or power off the camera when there is a storm or lightning.
7. Remove the monitor power adapter during long periods between use.
8. Use only the accessories and power adapters supplied by the manufacturer.
9. To meet the regulations pertaining to parental responsibility, keep the devices out of the reach of infants.
10. Ensure that power cables do not get crushed or damaged by sharp edges.

FCC Compliance Statement: This device complies with Part 15 of the FCC Rules. Operation is subjected to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Products with CE Marking comply with EMC Directive (2004/108/EC); Low Voltage Directive (73/23/EEC); R&TTE(1999/5/EC) issued by the Commission of the European Community. Compliance with these directives implies conformity to the following European Norms:

EMC: EN 301 489

LVD: EN 60950

Radio: EN 300 328

FCC/CE WARNING

This equipment has been tested and found to comply with limits for a Class B digital device, pursuant to Part 15 of the FCC rules and ETSI (EN) 300328. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more

of the following measures:-Reorient or relocate the receiving antenna.-Move the equipment away from the monitor.-Plug the equipment into an outlet on a circuit different from that to which the monitor is connected.-Consult the dealer or an experienced radio/television technician for additional suggestions. You are cautioned that any change or modifications to the equipment not expressly approved by the party responsible for compliance could void your authority to operate such equipment.

Disposal

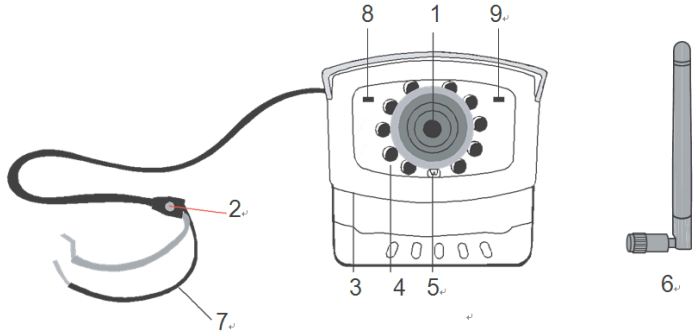
If the camera system no longer functions or can no longer be repaired, it must be disposed of according to the valid statutory regulations. Disposal of spent batteries / accumulators:

You are required by law (Battery Ordinance) to return all spent batteries and accumulators. Disposing of spent batteries/accumulators with common household waste is prohibited! Batteries/accumulators that contain hazardous substances are marked with the symbols on the side. These symbols indicate that it is prohibited to dispose of these batteries/ accumulators in the household waste. The abbreviations for the respective heavy metals are: Cd= cadmium,

Hg= mercury, Pb= lead. You can return spent batteries and accumulators that can no longer be charged to the designated collection points in your community, outlets or wherever batteries or accumulators are sold. Following these instructions will allow you to fulfil the legal requirements and contribute to the protection of our environment!

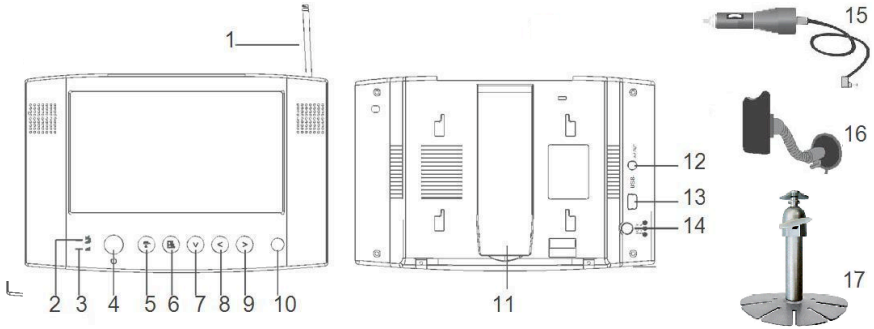
The System Parts

Wireless Camera



1. Camera Lens
2. Pairing Key (cover/sealed)
3. Mounting Bracket
4. IR LED (Night Vision)
5. EDS (light sensor)
6. Antenna
7. Power Cord
8. Link/Pair LED Indicator
9. Power LED Indicator

7" LCD Wireless Monitor



1. Antenna
2. Pairing Indicator
3. Signal Indicator
4. Power On/Off
5. Change Channel/Pair Camera
6. Menu Selection
7. Cursor Down
8. Cursor Left
9. Cursor Right
10. IR Sensor
11. Back Flip Stand
12. A/V Out
13. USB Out (none functional)
14. DC In
15. Cigarette Power Adaptor
16. Windscreen Holder
17. Dashboard Mount

Trouble Shooting Table

Before requesting service, please complete the checks detailed below. If you are in doubt about any of the following, or if the solutions described in the chart do not solve the problem, please contact us.

Problem	Possible Cause	Remedy
System Message shows “No Signal” on the monitor screen.	No power supply to corresponding camera(s).	Check that the reversing light (if the camera is powered from the reversing light) is working. Check the camera wiring, ensure the polarities are correctly connected and 12-24V is available.
Low signal, or unstable signal.	Channel is not paired with camera.	To complete Pairing, select reverse gear, with the hand brake ON, then press the camera pair button. See [Advanced Operation - Pairing Camera] section as a guide.
Low signal or unstable signal	Antenna directional limitation.	Adjust & secure camera antenna, position camera & monitor antenna vertically.
	Powerful transmitter / radio signal in vicinity of monitor/camera.	Relocate source of radio signal, or reposition the camera/monitor.
Dim / over bright image on monitor screen.	Monitor brightness incorrectly adjusted.	Press [OK] button, select menu, enter [System Setup]; adjust [Brightness]. See [Advance Operation – System Setup] for detail.

For technical support please email:

support@trailervision.co.uk

Trailer Vision™

Trouble Shooting

This section offers some helpful information to overcome most of the problems that you may encounter. We also hope that this section assists you to achieve a quick and easy installation/setup.

Problem Diagnosis

This innovative digital wireless solution integrates advance Frequency Hopping Spread Spectrum (FHSS) technology. This technology greatly reduces the interference that comes from other devices using the same radio frequency (2.4GHz), e.g. WIFI, Bluetooth, cordless phones etc. You now can enjoy superior wireless picture quality without a flickering or noisy image. However, weaker signal (lag or still image) may be observed from time to time, depending on the environment where the system is installed.

The system complies with FCC part 15.247, ETSI (EN) 300 328, audio/video signals transmitted about, or over 500 feet / 150 metre in the 'line of sight'. However, 'line of sight' installation is difficult to achieve due to obstacles etc. Factors affecting transmission include microwave ovens and/or other high frequency electromagnetic waves. Reinforced concrete walls, large-scale metal products and objects should not be located near to the camera, or the monitor. Water also creates an obstacle to signal transmission, as it absorbs the signal and should be avoided. People etc passing through the transmission area may also cause unstable signal quality. However, in 'normal use' as a rear-view or interior (vehicle) camera, the system should offer excellent performance and provide a clear and interference-free image/view.

How to improve the wireless signal quality?

If possible, remove any obstacles from between the camera and monitor that might reflect/absorb the signal. Obstacles could include furniture, cabinets or walls. If the wireless signal strength is low, position the monitor/antenna at a new angle (ideally vertically), or readjust camera/monitor position until an improvement is achieved. Or, if possible, relocate the camera closer to the monitor.

Why Image Compression?

In order to achieve a secure and interference free signal, this digital wireless system utilises a narrow 2Mb frequency-hopping bandwidth. Different from traditional 2.4GHz analogue wireless systems, the digital wireless signal is compressed and then transmitted in Motion JPEG (MJPEG) format. By digitising and compressing the raw analogue data the available bandwidth is used more efficiently/securely. Consequentially, you might observe an indent image line if you are using a larger display monitor, or a plasma TV.

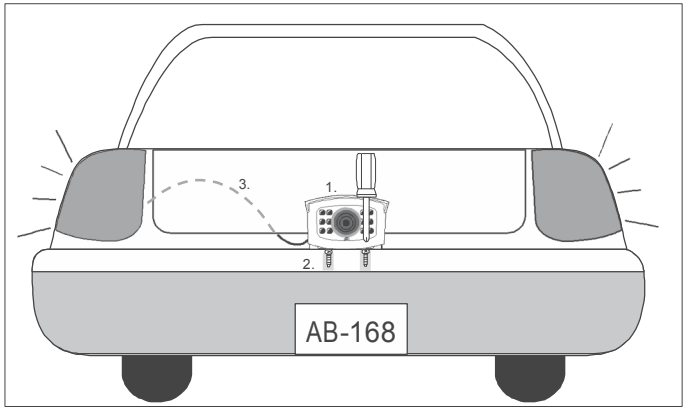
How to improve the image quality when using large display screens?

When QVGA is selected, 'pixel scattering' is unavoidable. However, you can change the image to VGA and by doing so, more pixels are 'scattered' on the screen. Therefore to achieve the best display performance, when outputting the video/signal, a 32" or smaller monitor / TV is recommended.

Getting Started

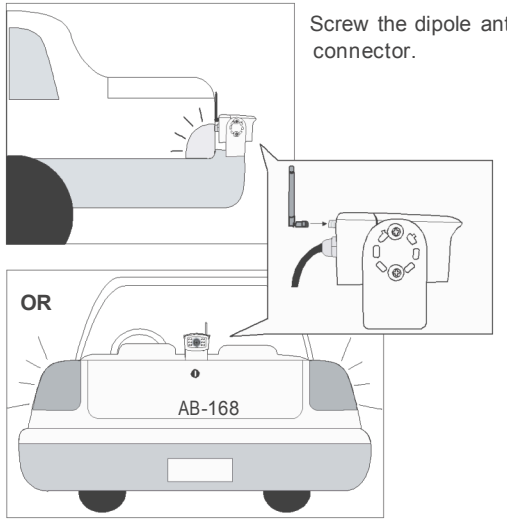
Step1: System Connections

Camera Connection:



1. For reversing, choose a location on the rear bumper etc that you wish to install the camera (usually in the middle of bumper), for a HGV etc high up and looking down, usually gives the best view. For inside a horsebox/trailer, mount the camera high up and ideally behind the horse(s).
2. Screw the camera's mounting bracket to the desired location.
3. For reversing, connect the power cable to the reversing light of the vehicle and the camera will be automatically powered when the vehicle is in reverse; otherwise connect to any available power source (ideally use a switched source to prevent inadvertent battery drain).

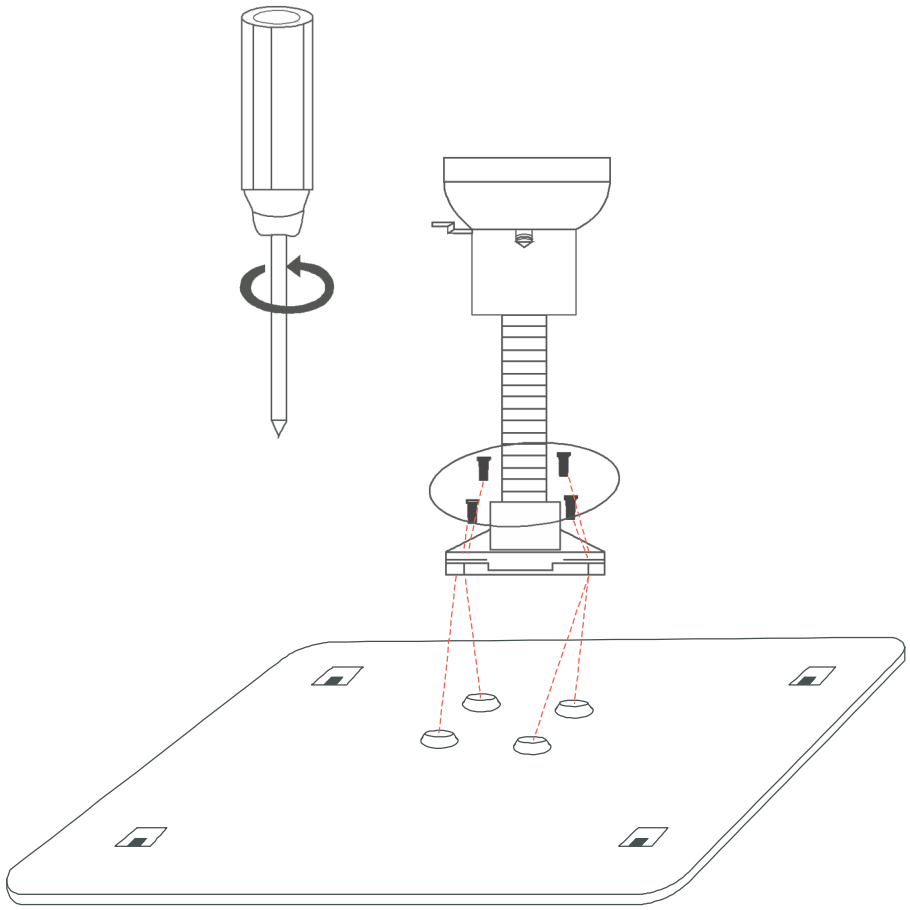
Antenna Installation to the Camera:



Screw the dipole antenna to the antenna connector.

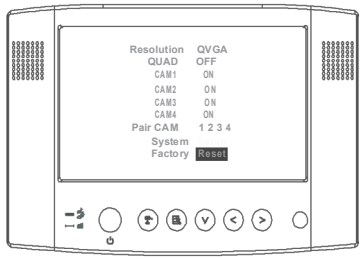
Windscreen Holder Installation Guide

(Please use the dash-board mount for permanent fixture).

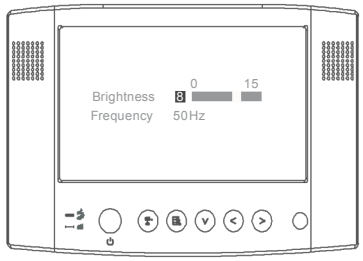


Fasten the screws to the metal panel as shown above.

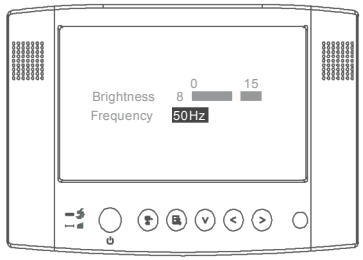
System Setup and Reset



A. Select [System Setup], press [OK] to enter.



B. Use ◀ ▶ to adjust monitor brightness. ⚠ Brightness setting takes effect on LCD monitor only.

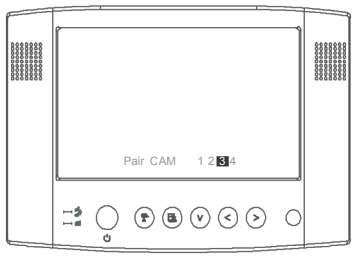


B. Use ◀ ▶ to select the required frequency (for the UK, please set the frequency to 50Hz).

Pairing a Camera(s)

⚠ Proceed with this function ONLY when the camera cannot be found by the system or when you have an additional/new camera(s) to view.

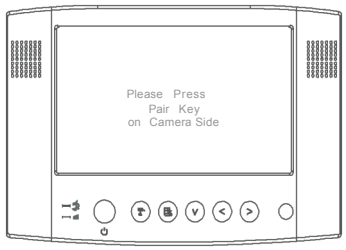
⚠ Before pairing the camera, make sure that the camera power cord is correctly connected to a live power source & the blue LED is illuminated.



A. Simply pair the camera by selecting the desired channel in Menu Mode.

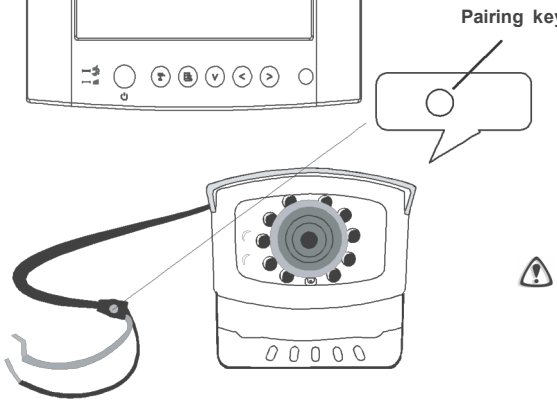
B. Only assign one camera to one channel. Channel memory will be overwritten if another camera is assigned to the same channel.

C. Pairing a new camera to channel 3, settings as shown:



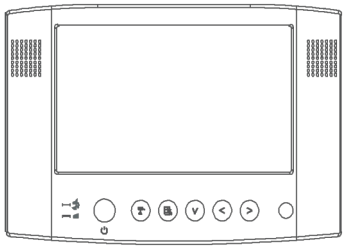
D. Press (Pair).

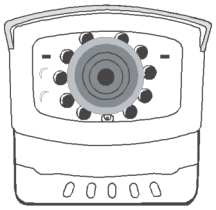
E. System will count down within 60 seconds, system message as shown:



F. Within the 60-second count down, press the Link/Pairing Key on the camera cable.

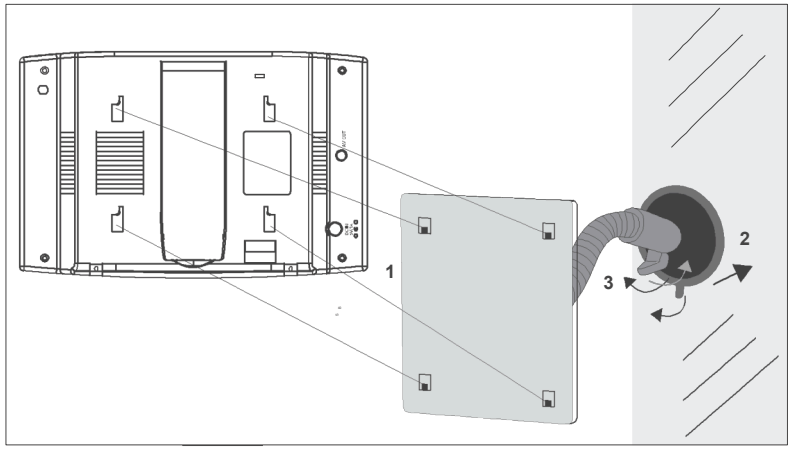
⚠ To complete Pairing, the camera needs to be powered, which may mean that the reverse gear will need to be selected (without the engine running and with the hand-brake applied).



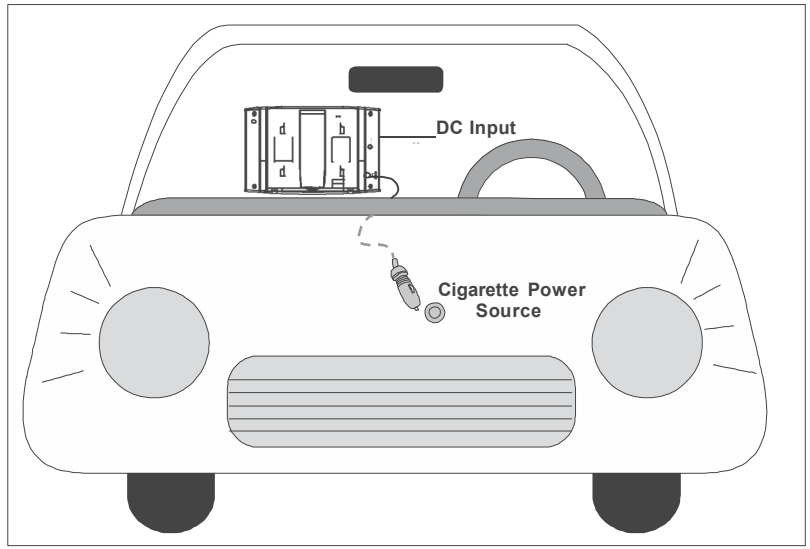


G. Once pairing is completed, the camera and monitor status indicators will illuminate.

LCD Monitor Connection



1. Fasten the metal panel to the monitor.
2. Attach the rubber pad to the windscreen. Make sure the glass is clean and dry to ensure that the holder fixes securely.
3. Pull the lock knob down to fix the holder (this holder is not designed to be left permanently in the windscreen – please use the dashboard mount for permanent fixture).



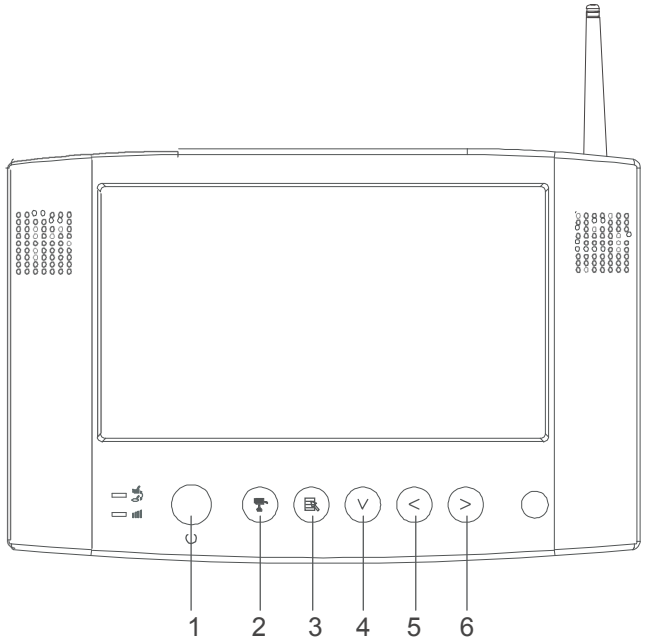
4. Connect the cigarette adaptor to the DC power jack of the LCD monitor.

⚠ ONLY use the provided power adaptor (a hard-wire power adapter is available separately).

5. Plug the power unit to the cigarette power source (which may operate via the ignition).
6. Position the monitor antenna (& camera antenna) vertically to achieve the best reception.

Step 2: Basic Operation

Monitor Function Buttons and Indicators



1. [Power Button]
Press the button to power ON, hold it down to switch power OFF.

2. (View Mode) [Scan Channels] / (Menu Mode) [Pair Camera]
In View mode, manually scan available camera channels. In Pair mode, assign and pair a camera to a specified channel.

3. (Menu Mode) [Menu / Enter Button]

4. (Menu Mode) [Cursor DOWN] / (QUAD View Mode)

5. (Menu Mode) [Cursor Left] / (QUAD View Mode)

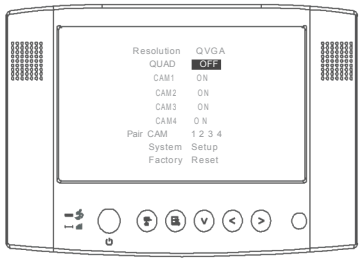
6. (Menu Mode) [Cursor Right] / (QUAD View Mode)

Setting QUAD Display

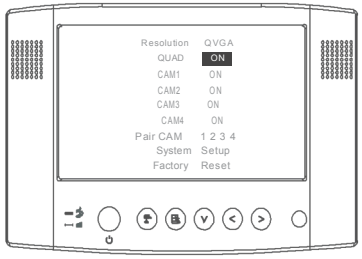
⚠ This function is available for multi cameras use. Before setting QUAD display, make sure all cameras are paired to assigned channels. See [Advance Operation – Pair Camera] section as a guide.

⚠ QUAD display will be restored to one camera display after pressing the directional keys for manual scan.

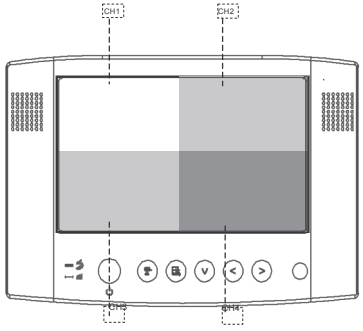
⚠ To ensure correct display, turn all available channels ON PRIOR to entering QUAD mode.



A. Use ◀ ▶ to turn all available channels ON.



B. Use ◀ ▶ to turn QUAD Mode on.



C. QUAD display as shown. Unavailable channels will be displayed as a blank screen.

⚠ To leave QUAD display, simply press ◀ ▶ ▼ to go to a specific channel.

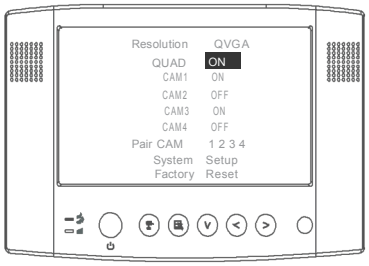
◀ = CAM 4 ▶ = CAM 3 ▼ = CAM 2

⚠ In QUAD display/ [Pair] functions are not available.

Skip Certain Camera(s) During Manual Scan

Before setting Scan and Skip, make sure all cameras are paired to assigned channels, see next pages for detail.

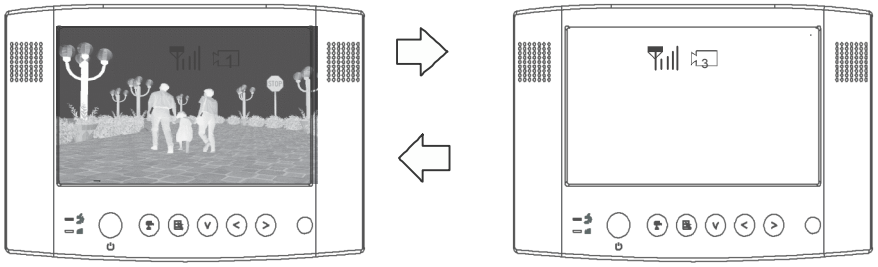
Make sure the channel assigned to the reversing camera is turned ON.



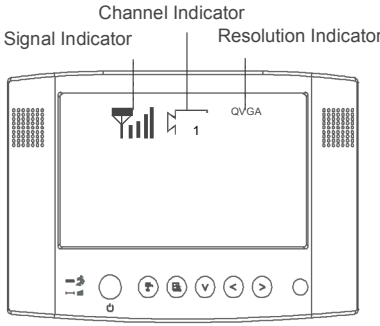
A. Simply set the skip camera(s) OFF by pressing ◀ ▶ (Left / Right).

B. To skip Camera 2 and 4 by pressing (Cam), settings as shown:

Display as shown:



View Mode



A. Signal Indicator shows signal strength, more bars indicate a stronger signal.

Signal Level	Indicator	VGA Frame Rate	QVGA Frame Rate
Perfect		5~10Fps	15~30Fps
Good		3~5Fps	12~20Fps
Fair		2~4Fps	8~15Fps
Low		0~1Fps	0~4Fps
Zero		0Fps	0Fps

It's recommended that QVGA resolution is utilised to ensure that a smooth image is displayed. To do so, simply select [Resolution] to switch to QVGA as shown on the [Resolution Indicator].

B. Reversing Camera Operation Steps:

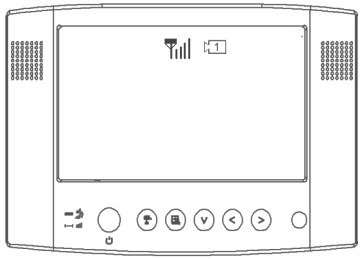
1. Press [Power] button to power ON.
2. Switch to QVGA mode if necessary.
3. Select Reverse Gear (if the camera is powered by the reversing light).
4. Reverse image will be displayed.
5. If the/a camera is used to view the interior of a vehicle/horsebox, then it should be powered from an ignition controlled circuit, or a lighting circuit could be used.

STOP REVERSING when [NO Signal] shows on the monitor.

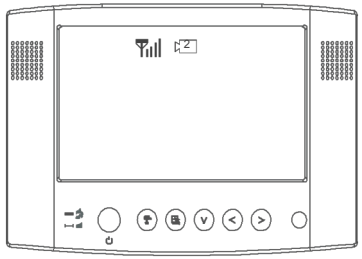
Press [Cam] button to locate the reversing camera channel if necessary.

This is a driving aid, safe driving, good observation and use of the rear-view/wing mirror are still necessary.

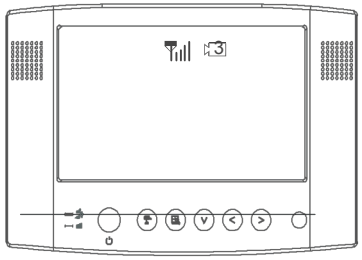
C. Channel indicator shows the current camera being displayed by the monitor.
By pressing (Cam), you can manually switch between cameras.



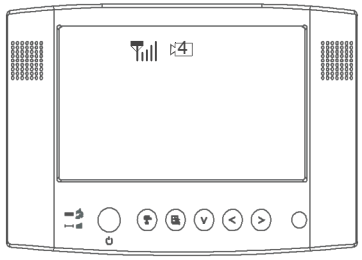
Camera 1



Camera 2



Camera 3



Camera 4

Step3: Advanced Operation

Knowing the Menu

By Pressing (Menu), you can enter / exit Menu Mode
You can Use (Left / Right / Down) to select and change the settings.